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ABSTRACT

Noting that the popular press and other media have purveyed much information and misinformation about the status of adult literacy in the United States, this paper focuses upon what is known about literacy levels and gives special attention to changes in literacy demands and to what is currently being done to meet those demands. The first section of the paper ("What Is Literacy and Who Is Literate?") examines several historical definitions of literacy before looking at national surveys of literacy abilities. The second section ("Changes in Literacy Patterns and Demands") explores changing demands, habits, and abilities of the population since the 1700s; while the third section ("Adult Literacy and Basic Education") summarizes demographic information about who receives basic education, what is known about the cognitive characteristics of adult illiterates, and how much time is required for learning gains. The fourth section ("Effective Literacy Programs and the Problem of Transfer") reviews research on effective programs and studies of the extremely limited transfer of newly learned literacy abilities. The final section of the paper identifies trends in the research, some problem areas and recommendations for future study. (A six-page reference list is appended.) (Author/FL)

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THE STATUS OF LITERACY IN OUR SOCIETY

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A paper presented at the National Reading Conference
Austin, Texas
December 5, 1986

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The Status of Literacy in Our Society

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(Abstract)

This paper is a selective review of research related to adult literacy. This review is arranged in five major sections. These are:

I. What is Literacy and Who is Literate?

II. Changes in Literacy Patterns and Demands,

III. Adult Literacy and Basic Education,

IV. Effective Literacy Programs and the Problem of Transfer, and

V. Trends, Problems, and Recommendations.

Section I examines several historical definitions of literacy before focusing upon several national studies of literacy abilities. Section II explores changing demands, habits, and abilities of our population since the 1700's. Section III summarizes demographic information about who receives basic education, what is known about the cognitive characteristics of adult illiterates, and how much time is required for learning gains. Section IV reviews research on effective programs and studies of the extremely limited transfer of newly learned literacy abilities. The final section identifies trends in the research, areas of promise, and areas for recommendation.

THE STATUS OF LITERACY IN OUR SOCIETY

During the past few years, the popular press and other media have purveyed a good deal of information and misinformation about the status of adult literacy in our society. Many educated people are unable to keep abreast of current adult literacy research and have sometimes depended upon the popular media for information. This dependence has been upon some accurate information mixed with a muddle of exaggerations and misinformation. This paper will focus upon what in known about literacy levels of adults giving special attention to changes in literacy demands and what is currently being done for adults experiencing literacy difficulties. The conclusion will address major recommendations, trends and problems associated with adult literacy.

What is Literacy and Who is Literate

The question of who is literate and who isn't has been inadequately answered by politicians, well-intended social activists, the advertising agency for the National Coalition for Literacy, and nearly every local and national news publication in the nation. The result is confusion on the parts of many intelligent people about who needs what sorts of help with what sorts of reading and writing.

The most often seen misinformation reported in the media suggests that 23 to 26 million people are totally or functionally illiterate with an additional 23 million people functioning at a marginal level. Concrete examples and anecdotes intended to clarify these data often portray individuals barely able to read and write. These figures indicating tens of millions of illiterates are usually attributed to the Adult Performance Level study performed in the early 70's (Northcutt, 1975). Northcutt and his colleagues selected 65 reading and writing

related tasks which they felt Americans should be able to perform. Inability to satisfactorily perform these tasks classified one into various categories of functional illiteracy. By the late 70's, the A.P.L. study and its subsequent media abuse had received severe criticism in the research literature to the point that very few researchers were willing to report data in terms of "millions of illiterates." Data were reported in less simplistic formats which indicated the portion of the population able to perform specific tasks. To Northcutt's credit, the A.P.L. data were also available in this format. Many reporters, politicians, and agency bureaucrats have ignored more accurate presentations as well as more recent data on literacy and have continued to inaccurately report 23 to 60 million illiterates based on misinterpretation and misuse of data over a decade old.

In many cases, the reporting of this information has been well-intended, creative, and industrious. During 1985-86, advertising executives for the National Coalition for Literacy attempted to raise national awareness about literacy problems. They creatively extended the figures reported from the A.P.L. study and proclaimed in newspaper advertising throughout the nation that by the year 2000, two out of three adult Americans may be illiterate. Departments of Education in many states have also performed manipulations of the A.P.L. data. Indiana, for example, has multiplied the number of illiterates reported in the early 70's by the subsequent increase in population and then estimated the proportion of that expanded illiterate population living in Indiana. The result is an exact sounding figure which reports the number of illiterates in Indiana. This process has been extended to the point that I've heard a recent radio report of the number of illiterates in my home county based on 15-year-old misinformation gathered in a different

part of the nation.

In addition to newspaper stories which often quote each other about the number of illiterates, the nation has been innundated with news documentaries, docu-dramas, and interviews with Jonathan Kozol discussing his most recent book on illiteracy. The result is that school teachers and some university professors requote media derived information giving it an additional cachet' of apparent accuracy.

Definitions of Literacy

Part of the explanation for this muddled situation is that literacy is not easily defined. In a recent paper for the United States Office of Educational Research and Improvement, Valentine (1986) addresses issues central to definitions of literacy. He points out that much of the confusion derives from the fact that there is little agreement upon what skills comprise literacy. For example, which clusters of skills comprising reading and writing are essential? One can side-step the issue of what skills comprise reading and writing and simply look at materials people are able or unable to read and write. This, however, creates another problem of definition: Literacy is being able to read and write which materials? Bormuth (1975) suggested that the list of materials will always differ from person to person and situation to situation and therefore offers the definition of literacy as "the ability to respond competently to real-world reading tasks" (p.65). Guthrie (1983, p. 669) expands on this notion by noting that the "reader's literacy depends on the context of the situation, not on a specific achievement level."

Some writers focus on specialized forms of literacy. Sticht (1975, pp. 4-5) differentiated externally imposed literacy tasks from internally

imposed tasks and defines functional literacy as:

> the possession of those literacy skills needed to perform some reading task imposed by an external agent between the reader and a goal the reader wishes to obtain.

Such definitions rapidly create new problems. Kirsch and Guthrie (1977-1978) pointed out that reading the same material (i.e., a news magazine) is functional for some people and leisure reading for others. Valentine (1986) suggested functional literacy is the area of overlap between print literacy and functional tasks. He leaves it to others to define exactly what comprises print literacy.

Some researchers and government agencies have attempted to define literacy by linking it to a grade level of performance. Harmon (1987, 8) reported that researchers "have variously proposed standards ranging from a fourth- to a twelfth-grade level. This search has almost become a modern-day quest for the Holy Grail." Some government agencies simply use grades completed in school as a measure of literacy. Smith, Balian, Brennan, Gorringe, Jackson & Thone (1986) indicated the National Health Survey suggests 4th grade is literate, the Census suggests 6th grade is literate, and the Department of Education suggests 8th grade is literate. Rationales are usually not discussed. The unacceptability of this sort of approach is highlighted by Kirsch and Guthrie (1977-1978) who point out that the average grade scores of eighth graders in Chicago range from 4.4 grade level in the lowest school to a median level of 10.5 in the best school. Darling (1981) made an even stronger case for unacceptability by noting that of students registered for adult basic education in Jefferson County, Kentucky, the median grade completed was 8.6, but the median tested reading grade level of entering students was 2.0.

The problem of establishing a sensible grade level indicator becomes even more problematic when the role of reader background is considered. Diehl and Mikulecky (1980) and Mikulecky (1982) have reported data that indicate workers in a variety of occupations competently read work-related material that averages 1-2 grade levels in measured difficulty above the difficulty levels of general newspaper-like material the workers can successfully comprehend. The authors attribute this seeming higher ability to familiarity with topic and format of the job-related material. Sticht, Amijo, Weitzman, Koffman, Roberson, Chang, & Moracco (1986) presented military data which indicate a range of four grade levels of tested reading ability between the reading abilities required for job-related reading of highly experienced workers and workers with no experience on the topic being read. This suggests that background knowledge can account for up to four grade levels of reading ability with a given topic and print format. Grade level definitions of literacy levels are particularly ineffective as background knowledge of readers increases.

The research literature is filled with attempted definitions of literacy and critiques of those definitions. The more focused the definition, the less likely it is to apply for all cases. More general definitions tend to be more accurate, but not very useful. William Gray's (1956) omnibus definition seems to be as complete as any. Gray stated:

> A person is functionally literate when he has acquired the knowledge and skills in reading and writing which enable him to engage effectively in all those activities in which literacy is normally assumed in his cultural group. (p. 24)

Since literacy appears to be more in the nature of changing

relationships than measurable quantities, it is unlikely that anyone will arrive at an acceptable level or criterion allowing one to accurately and usefully state the number of illiterates.

Who Can and Cannot Accomplish Literacy Tasks?

Though it may not be possible to define literacy in a fashion which allows us to usefully and accurately state the number of illiterates, it is possible to roughly suggest proportions of the population who can and cannot successfully accomplish particular literacy tasks. This section of the paper will briefly address a few studies performed before 1980 giving special attention to the previously mentioned A.P.L. study. More detailed examination will be made of data from National Assessment of Educational Progress studies released in 1985 and 1986.

When examining the data presented below, it is important to note that few studies report a high degree of basic can't read a word illiteracy. This is important from an educator's perspective because teaching approaches and materials required to teach basic reading and writing differ significantly from the approaches required to teach more complex tasks like competently reading equal opportunity announcements, consumer information, and government forms.

Listed below are indicators of areas of adult reading difficulty derived from the findings of the A.P.L. study (Northcutt, 1975). A.P.L. results indicate that of adults tested:

60% did not accurately calculate from advertisements price differences between new and used appliances;

44% did not successfully match want ad job requirements to personal qualifications;

40% did not accurately determine correct change given a cash register receipt and the denomination of a bill;

36% did not enter the correct number of exemptions on a W4 form;

26% did not determine if their paycheck was correct;

24% did not add their own correct return address to a letter;

22% did not address a letter well enough to ensure it would arrive at its destination;

20% did not comprehend an equal opportunity announcement; and

20% did not write a check that would be accurately processed by a bank.

The general magnitude of the A.P.L. results was supported by other major functional literacy studies of the 70's. These included the Survival Literacy Study (Louis Harris & Associates, 1970), the Adult Functional Reading Study (Murphy, 1975), the Mini-Assessment of Functional Literacy (Gadway & Wilson, 1974), and military reports from Project REALISTIC (Sticht, Caylor, Fox, Hauke, James, Snyder, & Kern, 1972).

Fisher (1978), in a thorough analysis of major functional literacy studies of the 70's, concluded that most of these studies tended to be biased in the favor of overestimation. He noted that even a small proportion of college graduates made very basic errors on items they could reasonably be expected to capably master. Fisher reasoned that it may be some subjects grew weary of taking test items and exercised less attention and care than would be employed in real situations. Further, not all subjects who responded to items face real <u>functional reading tasks</u> comparable to those with which they were tested. For example, many rural subjects had no need to read urban bus schedules and some subjects had never previously encountered check writing tasks.

Two recent studies performed by the National Assessment of

Educational Progress provide the most accurate currently available estimation of the literacy abilities of young adults (Applebee, Langer, & Mullis, 1985; Kirsch & Jungeblut, 1986). The first of these studies analyzes reading ability data collected from 251,000 nine-to-seventeen-year-olds between 1970 and 1984. The second study employed some 500 interviewers to assess during 90 minute interviews the functional literacy abilities of 36,000 adults aged 21-25 in the homes of those adults.

The test construction approach in these two studies employed item response theory. In neither study did each subject receive all test items. Item response theory and data manipulation were used to arrive at estimates of item difficulty based on responses of representative portions of the total study samples. As a caveat, the reader should know that a statement like 40% of adults were unable to interpret an appliance warranty does not literally mean that 40% of all adults taking the test were unable to interpret the warranty. Test items were statistically assigned difficulty levels ranging from 150 to 500 based upon performance of subjects and comparison to performance of other items. Average performance of various demographic groups (i.e., white, black, and hispanic) is stated in terms of these difficulty levels. Some of the N.A.E.P. test designers caution that it is a somewhat risky inferential leap to assume that if a percentage of a demographic group score below the difficulty level assigned an item (i.e., the appliance warranty), the actual stated percentage of that group will not be able to actually comprehend the item. On the other hand, it is nearly impossible to say what item scores mean without making such inferential leaps. This paper will present test results in terms of percentages of demographic groups scoring below item difficulty levels and request the

reader to view such data cautiously.

Among the cautions required in interpreting this data is the recognition that, in the United States, data reported in racial categories is strongly confounded by socio-economic status. Disproportionate percentages of Black and Hispanic Americans have lower incomes and live in conditions nonconducive to literacy development.

In 1985, the National Assessment of Educational Progress released The Reading Report Card (Applebee, Langer, & Mullis, 1985). This document reports analyses of the reading performances of over 251,000 randomly selected school children between 1970 and 1984. Examination of the reading performance of 17-year-olds (the oldest group studied) suggests a good deal about the reading abilities of current and future young adults.

The N.A.E.P. study authors report that the reading performance of 17-year-olds improved between 1980 and 1984, but that this may reflect improvements at younger ages rather than an increase in quality of secondary schooling. Further, nearly 100% of this age group was able to read at a basic level. According to N.A.E.P. test items, achieving at the basic level implies being able to:

- follow brief written directions;
- select words, phrases, or sentences to describe a simple picture;
- interpret simple written clues to identify objects;
- locate and identify facts from simple informational paragraphs, stories, and news articles; and
- combine ideas and make inferences based on short, uncomplicated passages.

In addition, nearly 84% of 17-year-olds were able to perform at the intermediate level. According to N.A.E.P., performance at the

intermediate level implies being able to do all the tasks described above in addition to being able to:

- search for, locate, and organize information found in relatively lengthy passages;
- recognize paraphrases of what has been read; and
- make inferences and reach generalizations about main ideas and author's purpose from passages dealing with literature, science, and social studies.

To place this intermediate level in perspective, it should be noted that this is the level achieved by the average 13-year-old or eighth grade student. Approximately 40% of 17-year-olds achieve beyond this level and reach the adept level. Readers who achieve at the adept level are able to:

- understand complicated literary and informational passages; and
- analyze and integrate less familiar material and provide reactions to and explanations of the text as a whole.

Less than 5% of 17-year-olds perform beyond the adept level and achieve at the advanced level. At the advanced level, readers are able to:

- extend and restructure the ideas presented in specialized and complex texts. Examples include scientific materials, literary essays, historical documents, and professional material;
- understand links between ideas even when those links are not explicitly stated; and
- make appropriate generalizations even when texts lack clear introductions and explanations.

Though only a tiny minority of 17-year-olds are prepared at the advanced level most university professors would prefer for entering

freshmen, it seems clear that very few 17-year-olds are illiterate. The N.A.E.P. basic level is really a good deal beyond having to struggle to read one's name or a restroom sign.

As heartening as this information is about the reading abilities of the typical 17-year-old, the N.A.E.P. report also sounds a warning. Virtually no minority students (less than 1%) score at the advanced level. Indeed, the average reading proficiency of Black and Hispanic 17-year-olds is only slightly higher than that of White 13-year-olds. Applebee, Langer, & Mullis (1985) compared reading proficiencies of Black, Hispanic, and White students from 1971 to 1984. In addition to the large gap between White and minority students, these authors pointed out that reading gains for Black nine-year-olds appear to have leveled off, suggesting a future leveling of gains for Black young adults.

In 1986 the N.A.E.P. released a major study of the functional literacy abilities of 21 to 25-year-old young adults (Kirsch & Jungeblut, 1986). This carefully designed study selected items from previous N.A.E.P. studies as well as designed items based upon what research indicated were reading tasks encountered by a substantial proportion of adults. Over 3,600 randomly selected adults were tested in their homes by over 500 trained interviewers. The result is a study which is the most accurate available estimation of what young adults can capably read. In addition, selection of items from previous measures allows comparison of the performance of these adults to the performances of other individuals on other tests.

The items and results of this study are categorized and presented in terms of three types of literacy: prose, document, and quantitative. Prose literacy involves understanding and using information from texts (i.e., editorials, news stories, poems, and the like). Document literacy

involves locating and using information in documents (i.e., job applications, payroll forms, bus schedules, maps, tables, indexes, and so forth). Quantitative literacy involves applying arithmetic operations to information embedded in printed materials (i.e., balancing a checkbook, figuring a tip, completing an order form, or determining the amount of loan interest from an advertisement).

Not all subjects participated in attempting test items. An extremely simple pre-test eliminated from full testing subjects judged to have such limited literacy skills that the literacy simulation tasks in the test would unduly frustrate and embarrass them. Only about 2% of the young adult population were estimated to be at this level. About half or 1% of the total population reported being unable to speak English.

Indicative summary results of this study are found in Tables I-III modified from Literacy:Profiles of America's Young Adults (Kirsch & Jungeblut, 1986, pp. 16-17, 28-29, 36-37).

Insert Tables I-III

A few observations about the results are in order. When viewing percentages of the total 21 to 25-year-old population, it appears clear that there is not a large degree of basic illiteracy. Over 95% of young adults can:

* sign their names;
* locate expiration dates on a driver's license;
* locate a time on a meeting form;
* enter a caller's number on a phone message form;
* write about a job they would like;
* locate a movie in a T.V. listing; and
* enter personal information on a job application.

As with the N.A.E.P. data on school children, wide racial and ethnic differences appear in the young adult data. The data indicate that it is probable that 98% of Whites could fill in a job application while only 82% of Blacks and 92% of Hispanics would be able to successfully complete the same task.

Though a vast majority of all ethnic populations can accomplish basic literacy tasks, gaps in populations become even wider as the complexity of tasks increases. For example, it is probable that 22% of Whites would have difficulty writing a letter to state that an error was made in billing. On the same item, 60% of Blacks and 42% of Hispanics would be likely to have difficulty. Test data indicate that it is probable that 35% of Whites would have difficulty following directions to travel from one location to another using a map. On the same item, 80% of Blacks and 63% of Hispanics would be likely to have difficulty. Items at slightly higher levels are extremely difficult for all populations. For example, an item on the prose scale asks individuals to orally

interpret distinctions between two types of employee benefits. Nearly 90% of Whites, 99% of Blacks, and 97% of Hispanics would be likely to experience difficulty with this literacy task. Comparable percentages of all populations would be likely to experience difficulty calculating and totaling costs based on item costs from a catalogue.

The young adult literacy data make several points very clearly. The vast majority of young adult Americans have mastered basic literacy demands. This vast majority drops off rapidly and soon becomes a minority as every-day literacy tasks increase in complexity. Finally, differences in performance between Whites, Blacks, and Hispanics are extremely wide and distressing, especially at middle and upper levels. Bristow (1986) has observed that older Americans are more likely to experience literacy difficulties at lower levels since the percentage of Americans with less than 8 and even less than 4 years of schooling increases with the age of the population.

The young adults who were tested using N.A.E.P. simulations of functional literacy tasks also responded to items included in the N.A.E.P. school literacy assessment. This allows a comparison between the performances of students in grades 4, 8, and 11 and the performances of young adults. Table V contains information from Kirsch and Jungeblut (1986, p. 40) which makes this comparison.

Insert Table IV

The data from the above table indicate that only about 6% of the young adult population read below the 4th grade level, but 20% read below an 8th grade level and nearly 40% read below an 11th grade level. These totals are somewhat deceptive, however, due to wide racial and

ethnic disparities. Nearly 18% of Black young adults read below a 4th grade level, close to half read below an 8th grade level, and more than 2/3 read below an 11th grade level. Hispanic young adults perform somewhat better than Blacks, but nearly 30% read below an 8th grade level and close to 1/2 read below an 11th grade level. Substantial proportions of our young adult population, and especially our minority population, appear to be ill-equipped for the high and increasing literacy challenges associated with being productive and self-sufficient in our society.

Changes in Literacy Patterns and Demands

For the same reasons that it is difficult to define literacy, it is difficult to determine changes in patterns of who is literate and difficult to chart literacy demands faced by individuals. Harmon (1986), drawing upon the work of historians Carl F. Kaestle and Lawrence A. Cremin, estimated:

> By counting the number of men who could sign their name to deeds and other public documents as literate (literacy for women was deemed irrelevant in most of the colonies; for slaves dangerous), historians have reckoned that literacy in America rose from about 60 percent among the first white male colonists to about 75 percent by 1800 (p.118).

It is a bit more difficult to estimate the degree of middle and upper level literacy abilities during this same time period. One method by which it is possible to roughly infer reading abilities is to note what people were reading. Harmon (1986, pp. 118-119) cited Cremin's observation that Thomas Paine's Common Sense "sold 100,000 copies within

three months of its appearance in 1776 and possibly as many a a half million in all." A half million people was 20% of the colonial population. Cremin estimated that 1/2 or probably 10% "read it or heard it read aloud" (p. 118).

Given the fact that N.A.E.P. young adult data suggest less than 10% of young adults are able to read and distinguish types of employee benefits or generate an unfamiliar theme from a short poem, it appears the nation has not progressed a great deal in terms of higher level literacy. The majority of gains appear to relate to larger percentages of the population mastering lower and middle level literacy abilities.

Another method for analyzing changing literacy patterns is to examine population statistics for changes occuring over the course of a life span. In 1910, the official U.S. Census simply asked individuals if they could read or write in any language. A total of 7.7 percent of the population answered "No" to that question in 1910. Of that group, 41 percent were Black, 27 percent were native Whites, 30 percent were foreign-born Whites, and 2 percent were listed as other (Cook, 1977). On a higher literacy level, in 1910, only 8 percent of 17 to 18-year-olds graduated from high school; 6 percent of the group went on to enroll in institutions of higher education (Digest of Educational Statistics, 1979). The average citizen was probably closer to the 7.7 percent who said "No" than to the 8.8 percent who were high school graduates. For example, 25 percent of World War I enlistees were not able to comprehend extremely simple newspaper passages or compose written communications of any sort (Cook, 1977). Tyler has estimated that 55 percent of these enlistees were functionally illiterate in terms of being able to put their literacy to any effective military use (Tyler, 1978).

The context for literacy at the turn of the century was a context of elitism. An extremely small percentage of the population received either secondary or higher education. Even the high school graduation figures for 1910 (8.8 percent) are somewhat deceptive. The percentage of high school graduates in 1870 was 2 percent. An overwhelming number of adults at the turn of the century had less than a high school education. Of the tiny percentage who did graduate from high school, 75 percent went on to college. The gap between the tiny percentage of the highly educated, highly literate individuals, and everyone else was wide.

Changes in literacy during a single life span have been great. Compulsory schooling and immigration quotas lowered the percentages of totally illiterate individuals. By the original Census Bureau definition, under 1 percent of adults were totally illiterate in 1970 (Fisher, 1978). This figure coincides with the 1-2 percent of young adults screened by the N.A.E.P young adult pre-test.

During the time period since 1910, changing social conditions have preceded changes in acceptable levels of literacy. Each major war during this century has brought with it increased literacy demands for military performance. The second World War was close to a mid-point in this century. During World War II, the U.S. Army found it necessary to set a minimum criterion of a fourth-grade reading level for acceptance into the army. A special 1947 census defined literacy as five years of schooling and found 13.5 percent of the population illiterate. By the 1960's, the U.S. Office of Education had raised the level of acceptable literacy to eight years of schooling. Even this was considered too low in the 1970's when the Adult Performance Level study was released (Cook, 1977).

During the early 1980's, a survey of citizens in Milwaukee reported

the types of materials residents considered essential to normal functioning. These materials provide a reasonable idea of what current functional literacy means to a cross-section of adults. Frequently mentioned materials included relatively simple items like street and traffic signs and medicine bottle directions as well as more complex bank statements, health and safety pamphlets, loan applications, and product warning and antidote directions (Negin & Krugler, 1980).

Current estimates of occupational demands for literacy indicate that over 90 percent of occupations call for some reading and writing (Diehl & Mikulecky, 1980; Mikulecky, 1982). This is up from not more than 10 percent in the first decennial census undertaken in 1790 (Tyler, 1978). In addition, there has been a growing demand for literacy in the areas of recreation and self-realization. Newspapers are more varied in content than ever before and reach over 75 percent of Americans. Magazines and paperback books are experiencing an increase in sales (Dessaur, 1982).

The difficulty levels of occupational reading as well as newspaper and magazine reading are quite high. Mikulecky (1982) found the difficulty levels of the majority of reading materials on the job ranged from 10th to 12th grade level in difficulty with workers averaging more than two hours of daily job-reading. Even blue collar workers averaged more than 1 1/2 hours of daily job-reading. These findings concur with the findings of Rush, Moe, and Storlie (1986) in other civilian work settings and with Sticht (1982) for military settings. Though having a wealth of background knowledge on a topic can tend to effectively lower reading difficulty levels, the most heavy job-related reading is performed by new workers least likely to have that wealth of background

experience.

The uses to which literacy is put on the job appear to be more complex than typical uses of literacy in schools. The vast majority of school-related reading is reading to learn factual material, while a comparable majority of job-related reading is for problem-solving and making applications (Mikulecky, 1982). In addition, the literacy strategies associated with high job performance ratings are primarily higher level metacognitive strategies involving monitoring, focusing, and managing information (Mikulecky & Winchester, 1983; Mikulecky & Ehlinger, 1986).

The 10th to 12th grade difficulty level of workplace materials is mirrored by similar difficulty levels for other functional reading. Wire service news stories average at the 10th to 11th grade level in difficulty (Wheat, Lindberg, & Nauman, 1977). A recent study done by the College Board (Reading Today, Feb/March, 1986, p. 16), using the Degrees of Reading Power assessment of reading difficulty, found newspapers, magazines, and job-related materials to average at comparable difficulty levels (the 63-72 DRP unit range). This range embraces the average ability levels of high school sophomores and juniors. Again, since a wide range of topics and a wide population range are involved, individual reader background knowledge becomes less a factor.

There are a few exceptions to this general trend of higher literacy requirements. Some low-paying jobs can be simplified through fragmentation and automation. West Germany has been cost-effective by breaking down complex tasks to simple tasks done by an individual worker repeatedly. This is not as cost-effective as having a worker who is literate and can adjust flexibly to new tasks when the operation for

which he has been trained is temporarily halted. However, fragmentation can be cost-effective if the worker is paid an extremely low wage as are the immigrant guest workers in West German industries. In the United States, where no legal guest worker option exists, such fragmented jobs tend to be shipped out of the country leaving Americans with low literacy abilities without employment. Some fast food chains in the United States have eliminated the need for much literacy among employees by using pictures on cash register keys and computerized pricing. A trained manager must be knowledgable and available in the event of equipment difficulties, but the system works as long as less capable workers can accept extremely low pay for their severely limited performances. Similar approaches are being used in the automating of oil pipeline monitoring gauges and holographic package readers in grocery stores. The grocery store example is useful for examining this low skill job trend. Fewer mistakes and hold-ups mean faster lines and therefore the need for fewer low paid check-out personnel and packaging personnel who need to run and check prices. Computerized inventories lower the need for massive warehousing and many of the warehouse job associated with such massive operations. Several middle skilled level jobs are created for building, marketing, and servicing the holographic price readers (Harste & Mikulecky, 1984).

The social context for literacy has changed during a single life span to the point where functional literacy means a level of ability achieved by only an extremely small fraction of the population in 1910. Literacy can no longer remain the province of a tiny privileged elite minority. It has become a necessary part of functioning in most aspects of daily life.

Adult Illiteracy and Adult Basic Education

Most literacy problems faced by Americans are not at the rudimentary or basic levels. A small percentage of Americans, however, do experience extreme literacy difficulties and are being left behind by the increased literacy demands of our society.

Demographic Information

According to N.A.E.P. data, from 1-2 percent of American young adults either are unable to speak English or cannot recognize simple printed words and phrases. Kirsch and Jungeblut (1986, p. 5) point out that the one percent who could speak English and responded to a set of oral-language tasks performed at a low level suggesting to the authors that this group "may have a language problem that extends beyond processing printed information." If the criterion level for basic literacy is set for performance comparable to a fourth-grade level, approximately six percent of young adults experience problems with basic literacy (3.8% of Whites, 17.8% of Blacks, and 7.6% of Hispanics).

This section of the paper will examine the limited research information about this bottom percentage of adults experiencing literacy difficulties. Darkenwald (1986, p. 2), in a research review of effective approaches to teaching basic skills to adults, observed that the "research base in adult basic education is severely deficient, not only in quantity but in quality." Still, it is possible to draw upon research in providing a picture of teachers, learners, and programs concerned with basic adult literacy.

Fowler (1986), working through the Center for Survey Research at the University of Massachusetts, performed a survey of adult literacy programs and resources for the Coalition for Literacy. He noted that in

the fall of 1985 an estimated 400,000 students were enrolled in classes to teach basic reading and writing (G.E.D. and E.S.L. classes were eliminated). These students were about equally divided between Adult Basic Education classes supported by state and federal monies and volunteer programs such as the Laubach affiliates, the Literacy Volunteers of American, and the American Library Association programs. Between fall of 1984 and fall of 1985, there was a 9.3 percent increase in the number of students and a corresponding 9 percent increase in literacy program budgets to reach a level of $109 million. Fowler reported a 28.7 percent increase in the number of volunteer teachers (i.e., from 75,000 to 96,000).

Newman (1986), in an evaluation of the Advertising Council's Volunteer Against Illiteracy program during 1985, indicated that 8000 of the new teachers and 10,000 of the new students came to literacy programs via the special 800 telephone number set up by the advertising campaign. Newman also noted that preliminary data suggest that the 9 percent increase in students may be occurring more heavily in volunteer programs than it is in Adult Basic Education programs.

Comprehensive national demographic data is not available on who attends these basic literacy classes. The Literacy Assistance Center, however, has compiled data on the 40,000 learners involved in literacy programs in New York City (Cook, 1986). Data from a large urban center can provide some indication of who attends classes, at least in urban centers.

Of the 40,000 New York students, nearly 52 percent were enrolled in basic education classes while another 45 percent were enrolled in classes to teach English as a second or other language. Of the basic education students, 10.7 percent are reported to read below a 3rd grade

level. When the level is increased to 5th grade, 25.3 percent are not able to perform adequately. This suggests that of the 40,000 New York students, about 13 percent or 5,200 would fall within the parameters Fowler (1986) set for estimating the 400,000 students nationally receiving basic reading and writing training. In New York, 41% of students are male and 59% female. The typical learner, at least in New York City basic literacy classes, is likely to be female (59%), a member of a minority group (89%), and between the ages of 25 and 45 (52%). Approximately 1/3 of learners are between the ages of 16 and 24.

Cognitive Competencies and Characteristics

Adults demonstrating low reading levels differ from children with comparably low reading levels. Liebert (1983) compared the oral reading of adult basic education students to elementary-age children of comparable ability levels. He found that, for children, reading accuracy and rate decreased as passages became more difficult. The adult readers demonstrated no comparable variability in accuracy but similar declines in rate. The rates for adults ranged from 23 words per minute to 145 words per minute. Many adult readers in A.B.E. classes read extremely slowly. Bristow (1987) found adult reading rate to be a significant diagnostic predictor of comprehension difficulties. Johnston (1985, p. 174) used case study methodology to monitor the reading abilities and patterns of adult poor readers. He concluded that adult reading disability is influenced by "anxiety, attributions, maladaptive strategies, inaccurate or nonexisting concepts about aspects of reading, and a huge variety of motivational factors." In many cases, Johnston's disabled readers, who were constantly forced by society to confront reading material beyond their abilities, inappropriately overrelied on

background knowledge and context in situations where decoding strategies would have been more useful. This finding appears to be in contradiction with the findings of Lytle, Marmor, and Penner (1986) which indicate that 70 percent of illiterate and low-literate subjects consider reading to be primarily a decoding process. Gambrell and Heathington (1981) found 1/3 of poor adult readers were unable to provide a strategy for identifying an unknown word other than asking someone for help.

Time Needed to Make Gains

In the late 1970's many adult educators maintained the belief that adults were able to learn to read more rapidly than children because they possessed more life experience and background knowledge. To test this belief, Sticht (1982b), investigated the effect of method and rate of presentation of materials on the reading achievement of adults averaging 5.5 grade level in tested reading ability as well as the reading achievement of average 3rd to 5th grade students. Sticht found no evidence that adults performed better or learned more quickly than children at comparable grade levels.

Indeed, learning time is high for adults to make a grade level gain in reading ability. Darkenwald (1986) describes the work of Kent (1973) who performed an evaluation of 2,300 A.B.E. students from 200 classes in 90 programs located in 15 states. Reading gains from January to May averaged 0.5 grade level with 1/3 of the population showing no gain or a net loss. Comparable data from Kent's study of Manpower Development Training Act programs indicates that after 54 hours of instruction, the average reading level increase was 0.4. Sticht (1982a), in summarizing dozens of military studies, indicates a grade level gain in reading takes enlisted men from 80 to 120 hours of instruction. The Jefferson

County Adult Reading Program provides sense of the parameters of what is possible. Large scale evaluation studies suggest 100 hours of instruction per grade level gain in reading is typical. Darkenwald (1986) reports the Jefferson County Adult Reading Program as using a combination of counseling, individualized instruction, functional goals and group dynamics holds attrition rates to 1/2 to 1/4 of comparable programs and achieves reading gains .70 greater than comparable programs (approximately 54 hours of instruction per grade level gain). Pasch's (1985, p. 17) evaluation of project LEARN indicates that actual practice time is key with adult reading gains correlating most highly with "lessons completed and . . . not particularly related to number of hours tutored or days in the program."

Achieving the necessary practice and time on task has not been possible for most adult literacy programs, however. Mezirow, Darkenwald, and Knox (1975), in a national survey of urban A.B.E. teachers found that irregular attendance was perceived by 85 percent as the single most serious impediment to effective learning. Darkenwald and Valentine (1984, 69), in a survey of A.B.E. students, found that more than half reported having trouble attending class. Balmuth (1986) confirms and extends these survey results. After revieving several studies on attendance Balmuth noted that:

> The high rate of absenteeism in ABE is taken to be a fact of life, although an embarrassing and destructive one . . . A class could have an enrollment of 20 but only 2 or 3 in attendance. (p. 58)

Time on task for a typical A.B.E. student is extremely sparse according to Darkenwald (1986, 6). Learning time is diminished by irregular

attendance, the fact that the usual A.B.E. schedule provides only 4 to 6 hours of instruction a week, the fact that homework is very rare, and the fact that time-on-task per classroom hour is much lower than is typical for school children.

Effective Literacy Programs and the Problem of Transfer

It is this author's estimate that from six to 10 percent of adults read below a fourth-grade level and that little more than two percent of adults can be classed as truly illiterate in the sense of not being able to read or write a word. Adults who read at this level have a difficult time learning and attending classes. They face a minimum of several hundred hours of instruction before they can expect to approach meeting what most educated people consider daily functional literacy demands.

Darkenwald (1975), after analyzing a national sample of 478 randomly selected A.B.E. teachers, determined that emphasis on non-traditional subjects like consumer education, health education, and coping skills was associated with substantially lower drop-out rates and substantially higher class attendance. More than a decade later, Darkenwald (1986) analyzed adult literacy programs selected as being the most effective by the U. S. government's Joint Dissemination Review Panel. Darkenwald notes that these most highly selected programs:

> almost invariably integrate basic skills focus with instruction in life or "survival" skills needed by students to function effectively in the everyday world. (p. 29)

This observation of Darkenwald's is extremely important. It

implies that programs must teach the sort of literacy tasks learners will actually be asked to perform rather than simply teaching the general school-type literacy found in traditional materials. A growing body of research supports this observation. For example, Larson (1980) found a six-week literacy program has no effects on attrition from military job training nor did it affect the time required to complete subsequent job training. Sticht (1982a) reported that military recruits given traditional basic skills training make gains while in class, but tend to revert and lose their skills within eight weeks. In contrast, job related literacy and computational training does not suffer this reversion. U. S. Army retention studies have indicated that:

> personnel retained 80% of their end-of-course gain in job literacy training (but) only 40% of their end-of-course gain in general reading. (p. 40)

Similar indications of nontransfer have been found by Scribner and Cole (1978, p. 457) in their work with the Vai. They conclude that, "the effects of literacy and perhaps of schooling as well, are restricted . . generalized only to closely related practices."

Some indication of the degree of transfer one can expect has been provided by the N.A.E.P. study of literacy among young adults. Kirsch & Jungeblut (1986) correlated subject scores on the prose, document, and quantitative literacy scales of the young adult literacy assessment. Correlations ranged for $r = .49$ to $r = .56$. These correlations are surprising close and suggest that there is about a 25% overlap in the variance of performance with the different types of literacies measured by the N.A.E.P. Further research is called for, but it may well be that general literacy abilities account for only about 1/4 of the performance

on a specific type of literacy task. For some literacy tasks, it may account for considerably less of the variance.

These findings about effective programs and lack of transfer are important as educators decide how to allocate their resources. Currently many adult literacy programs and volunteer tutors direct their efforts toward the minority of adults experiencing extreme literacy difficulties. Though some programs teach literacy in functional and occupational contexts, many programs and tutors allocate most time and resources to general literacy training emphasising decoding, word-attack, and literal level understanding of non-functional stories. Research indicates that such approaches are associated with higher attrition, much lower transfer of reading gain, and much higher loss of gain after as little time as six weeks.

Teaching basic general literacy mainly to the bottom two to six percent of the adult population must be questioned as a wise allocation of limited resources. This population, which requires hundreds of hours of training, is generally unable to attend regularly for as many as 50 hours. Those who attend for longer apparently have a difficult time retaining what they have learned or transferring that learning to functional applications of literacy in daily settings.

In addition, major emphasis of attention and resources on this group creates several new problems. The much larger percentage of adults reading above the fourth-grade level but not well enough to easily function in society (14% to 20%) need a different sort of teaching than the basic literacy instructor training being provided most volunteer tutors. These adults are not likely to get what they need when they attend traditional literacy programs and indeed are likely to

be driven off by inappropriate training. This is particularly unfortunate since 50-150 hours of appropriate training for many adults in this group could bring them within reach of being able to function with the new literacy demands of our society.

Trends, Problems, and Recommendations

One trend is particularly clear in both the N.A.E.P. data and the adult literacy class attendance data. If you are an adult minority group member in the United States, you are considerably more likely to experience literacy difficulties than is a White adult. Hodgkinson's (1986) analysis of demographic data indicate that the baby boomlet which is increasing elementary school enrollments is made of of larger percentages of minority group membership than ever before. The birth rate for Whites is 1.8, for Blacks is 2.3, and for Hispanics is 2.8. The children for whom schools have been least successful are present in increasingly larger percentages.

The racial/educational split can also be observed at other levels. In many urban school districts, drop-out rates range from 50 percent to 60 percent and higher. At the same time in predominantly non-urban states like Minnesota, Wisconsin, Iowa, and North Dakota, state-wide averages for high school graduation exceed 80 percent with approximately 2/3 of 18-year-olds enrolling in colleges or universities. Statistically, an urban Black or Hispanic has nearly the same likelihood of dropping out of high school as a non-urban White has of enrolling in college.

In Megatrends, Naisbitt (1982) observed that information is the currency of the 1980's. To the extent that literacy is access to such information and wealth, in the United States we may be on the verge of

becoming more economically divided than ever before. This growing social and political problem has literacy and education close to its core.

The political nature of this growing literacy problem is becoming increasingly apparent in the solutions suggested to address the problem. Kozol in Illiterate America (1985) called for a massive national mobilization involving mass participation of the people. He offered Cuba and Nicaragua as examples of effective programs with government support as well as the initial stages of Paulo Freire's work in Brazil. Political/educational responses from the other side of the political spectrum can be observed in the National Advisory Council on Adult Education's recommendations to the President of the United States (Smith et al. 1986). The NACAE made 71 suggested solutions to the problem which address such topic areas as: Curriculum and Instruction, the Teaching Profession, Local Administration, Research, the System and Structure of Education, National Attitudes Toward Education, and Illiteracy. Among the six suggested solutions are:

- appoint a national task force on teaching reading,
- expand the discussion of reading teaching beyond the domain of educators to include the public,
- set national definitions for the various levels of literacy and use these definitions to determine eligibility for ABE programs and the "return on the investment" in such programs,
- incorporate military research findings into public education programs,
- consider requiring illiterate adults on welfare to enter educational programs, and
- consider shortening prison sentences for illiterate inmates who successfully complete reading programs.

Another idea which received some political attention during 1985-1986 is the idea of inter-generational transfer of literacy. In

1980 Sticht observed that one of the best ways to improve the reading performance of children is to improve the education level of their parents. Large gains in children's reading improvement followed World War II. A convincing case can be made for these gains being explained by the performance of children whose parents had taken advantage of the G.I. bill to acquire more education.

In 1985 Kozol and others picked up on Sticht's idea of programs to teach literacy to both parents and their children. Two proposed pieces of legislation on this topic were introduced but not passed by the United States Congress. The concept of improving adult literacy while teaching adults to work with their own children continues to receive a good deal of discussion and may yet offer an avenue for substantial literacy improvement.

Newman (1986) reported increased attention as well as financial and other resources being allocated to literacy improvement by businesses, foundations, and thousands of volunteers. She reports the contribution of more than $24 million in free media advertising time and space toward the goal of focusing national attention on literacy issues. In addition, a two-phased public service campaign has been developed by the media. The Public Broadcasting System has developed Project Literacy U. S. (PLUS) while the American Broadcasting Company has made its own concerted efforts to integrate literacy awareness into its news and information programming. One tangible result of this increased national attention has been the additional 20,000 tutors (for a total of 96,000) who volunteered to work with adult illiterates between November 1984 and September 1985. It is highly likely that number has continued to grow.

In addition to voluntary efforts, corporations and foundations through the leadership of the Business Council for Effective Literacy

have made other resources available for literacy program support. Thus far, this support has been primarily in the form of seed resources to initiate or expand literacy programs. An exception to this generalization is the Ford Foundation's support of the production of Cast-Off Youth (Sticht, Armstrong, Hickey, & Caylor, 1986). This study compiles the research, policies, and training methods used by the military to teach functional literacy to 100,00 enlisted men during the late 1960's and early 1970's. Its emphasis on integrating literacy training with functional training should prove useful to program developers interested in educating the majority of adults experiencing literacy difficulties in the United States.

Conclusion

We have more than one literacy problem in the United States. The problem receiving the most media attention is the painful problem of the small percentage of adults who can barely read or write. A much larger and different problem relates to the millions of adults who can read and write, but not well enough to meet the increasing literacy demands for attaining a comfortable living in United States. Confusion of these two aspects of literacy problems and the fact that these problems need to be addressed using different methods has led to a number of embarrassing misunderstandings including a national advertisement falsely claiming that by the year 2000, two out of three Americans may be illiterate.

The line between who has and who has not acquired enough literacy to function and thrive in the United States is, to a great extent, drawn along racial and ethnic lines. This division implies a dangerous potential for future conflict which is exaccerbated by the fact that the public schools will soon face even larger percentages of minority youth

-- sons and daughters, brothers and sisters of the students with whom the schools have already failed.

On the positive side, there is a groving avareness that, to be effective, basic literacy training needs to be integrated with functional uses of literacy. Though the nation is not experiencing the mass literacy mobilization Kozol (1985) calls for, there is a clear increase in avareness as well as volunteered efforts and resources on the parts of individuals and businesses. Though there has been no comparable increase in state and federal resources, there are indications that increased public avareness may lead to increased congressional avareness.

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Percentages of People and Selected Tasks
At of Above
Successive Points on the Prose Scale*

Table 1

Race/Ethnicity White	Black	Hispanic	Total	Selected Points On The Scale	Selected Tasks At Decreasing Levels Of Difficulty*
				500	
					397 Identify appropriate information in lengthy newspaper column
					387 Generate unfamiliar theme from short poem
10.8(0.9)	0.7(0.3)	3.3(1.1)	8.8(0.7)	375	
					371 Orally interpret distinctions between two types of employee benefits
					361 Select inappropriate title based on interpretation of news article
24.9(1.3)	3.1(0.6)	12.0(3.2)	21.1(1.1)	350	
					340 State in writing argument made in lengthy newspaper column
					339 Orally interpret a lengthy story in newspape
42.6(1.7)	10.5(1.6)	23.5(3.4)	37.1(1.6)	325	
					313 Locate information in a news article
63.2(1.4)	23.7(1.6)	41.1(4.1)	56.4(1.5)	300	
					281 Locate information on a page of text in an almanac (3-feature)
					279 Interpret instructions from an appliance warranty
					278 Generate familiar theme of poem
					Write letter to state that an error has has been made in billing
78.0(1.3)	39.9(1.9)	57.4(3.2)	71.5(1.4)	275	
					262 Locate information in sports article (2-feature)
88.0(1.0)	57.5(2.7)	72.1(2.6)	90.8(0.7)	250	
94.6(0.6)	73.6(2.3)	80.8(2.3)	90.8(0.7)	225	
					210 Locate information in sports article (1-feature)
98.0(0.4)	86.2(1.5)	93.8(1.5)	98.5(0.2)	200	198 Write about a job one would like
99.4(0.2)	94.1(0.9)	96.6(1.2)	98.5(0.2)	175	
100.0(0.0)	97.7(0.5)	99.8(0.2)	99.7(0.1)	150	
				0	

*Numbers in parentheses are estimated standard errors

*Number indicating difficulty level designates that point on the scale at which individuals with that level of proficiency have an 80 % probability of responding correctly

Percentages of People and Selected Tasks
At or Above
Successive Points on the Document Scale*

Table 2

Race/Ethnicity White	Black	Hispanic	Total	Selected Points On The Scale	Selected Tasks At Decreasing Levels of Difficulty*
				500	
10.5(1.0)	0.9(0.4)	3.2(1.6)	8.8(0.8)	375	365 Use bus schedule to select appropriate bus for given departures & arrivals
24.3(1.6)	2.5(0.5)	6.7(2.0)	20.2(1.3)	350	343 Use bus schedule to select appropriate bus for given departures & arrivals
					334 Use bus schedule to select appropriate bus for given departures & arrivals
44.0(1.8)	9.0(1.1)	20.8(3.1)	37.6(1.6)	325	320 Use sandpaper chart to locate appropriate grade given specifications
65.4(1.7)	19.8(1.5)	37.0(4.1)	57.2(1.7)	300	300 Follow directions to travel from one location to another using a map
					294 Identify information from graph depicting source of energy and year
					278 Use index from an almanac
80.8(1.1)	38.7(2.6)	54.7(3.8)	73.1(1.2)	275	262 Locate eligibility from table of employee benefits
					257 Locate gross pay-to-date on pay stub
					255 Complete a check given information on a bi
					253 Complete an address on order form
89.9(0.8)	55.5(2.7)	69.0(3.4)	83.8(1.0)	250	249 Locate intersection on street map
95.0(0.7)	71.0(2.2)	84.4(1.6)	91.0(0.8)	225	221 Enter date on a deposit slip
					219 Identify cost of theatre trip from notice
					217 Match items on shopping list to coupons
97.9(0.5)	82.3(1.7)	91.5(1.2)	95.5(0.5)	200	196 Enter personal information on job application
					192 Locate movie in TV listing in newspaper
					181 Enter caller's number on phone messages form
99.3(0.3)	93.2(1.2)	96.5(0.7)	98.4(0.3)	175	169 Locate time of meeting on a form
					160 Locate expiration date on driver's license.
99.9(0.1)	98.6(0.4)	99.1(0.3)	99.7(0.1)	150	110 Sign your name
				0	

*Numbers in parentheses are estimated standard errors

*Number indicating difficulty level designates that point on the scale at which individuals with that level of proficiency have an 80% probability of responding correctly

Percentages of People and Selected Tasks
At or Above
Successive Points on the Quantitative Scale*

Table 3

Race/Ethnicity White	Black	Hispanic	Total	Selected Points On The Scale	Selected Tasks At Decreased Levels of Difficulty*
				500	
					489 Determine amount of interest charges from loan ad
					376 Estimate cost using grocery unit-price labels
11.5(1.0)	0.8(0.4)	3.8(1.7)	9.5(0.9)	375	
					371 Calcualte & total costs based on item costs from catalogue
					356 Determine tip given percentage of bill
27.2(1.7)	2.4(0.8)	11.3(2.7)	22.5(1.4)	350	
					340 Plan travel arrangements for meeting using flight schedule
					337 Determine correct change using menu
44.4(1.7)	8.3(1.6)	19.9(3.5)	37.8(1.6)	325	
63.3(1.5)	22.0(2.1)	36.9(4.4)	56.0(1.4)	300	
					293 Enter and calculate checkbook balance
					289 " "
					281 " "
78.8(1.1)	39.3(1.9)	57.9(3.8)	72.2(1.1)	275	
89.4(0.9)	60.4(2.5)	74.6(3.0)	84.7(1.0)	250	
					233 Total Bank deposit entry
95.5(0.6)	74.4(1.5)	87.3(1.8)	92.4(0.6)	225	
98.0(9.4)	87.4(1.5)	93.1(1.3)	96.4(0.4)	200	
99.2(0.2)	94.8(0.9)	97.7(0.6)	98.6(0.2)	175	
99.8(0.1)	98.3(0.5)	99.6(0.3)	99.6(0.1)	150	
				0	

*Numbers in parentheses are estimated standard errors

**Number indicating difficulty level designates taht point on the scale at which individuals with that level of proficiency have an 80% probability of responding correctly

TABLE IV

Percentages of Young Adult Populations At or Above Average Reading Proficiency of 4th, 8th, and 11th Graders on NAEP Scale

NAEP Average Reading Proficiencies at 3 Grade Levels		Race/Ethnicity			
		Total	White	Black	Hispanic
	Scale Score				
Grade 11	289.3	61.5%	67.6%	31.0%	52.3%
Grade 8	260.7	79.8%	85.0%	53.0%	70.9%
Grade 4	217.5	94.0%	96.2%	82.2%	92.4%